Appl. No. 10/683,933
Amdt. dated July 25, 2008
Reply to Office action of April 30, 2008

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<u>**IN THE CLAIMS**</u>

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1) (**Currently amended**)   A method for processing packets through a plurality of protocol layers comprising:

      accessing a packet associated with a connection; and

      processing said packet through said plurality of protocol layers using a single thread <u>from a single processor by assigning said connection to a single processor of a multiprocessor server system for processing wherein packets associated with said connection are directed to said single thread in said single processor for processing and</u> wherein connection state information used by said plurality of protocol layers is preserved by mutual exclusion of other threads <u>from</u> processing packets for said connection through said plurality of protocol layers.

2) (Original)   The method as described in claim 1 wherein said single thread is uninterrupted while processing said packet through said plurality of protocol layers.

3) (Original)   The method as described in claim 1 further comprising assigning said packet to a processing queue wherein said processing queue provides single threaded processing of said packet through said plurality of protocol layers.

4) (Original)   The method as described in claim 3 wherein said processing queue provides single threaded processing of said packet through said plurality of protocol layers by assigning only one packet to be processed by said plurality of protocol layers at a time.

5) (Original)   The method as described in claim 4 wherein said packet is assigned to said processing queue based on address information of said connection.

6) (**Currently amended**)   The method as described in claim 1 further comprising generating a <u>unique</u> connection data structure specific to said connection based on address information of said connection<u> stored in said packet associated with the connection</u>.

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7) (Original)   The method as described in claim 6 wherein said address information comprises a local IP address and a remote IP address.

8) (Original)   The method as described in claim 7 wherein said address information further comprises a remote port address and a local port address.

9) (Cancelled)

10) (Cancelled)

11) (Cancelled)

12) (Cancelled)

13) (Cancelled)

14) (**Currently amended**)   The method as described in claim [[13]] **3** wherein said processing queue is an squeue.

15) (Cancelled)

16) (Cancelled)

17) (Cancelled)

18) (Cancelled)

19) (**Currently amended**)   The method as described in claim [[16]] **6** wherein subsequent data packets of said connection, are assigned to said single processor based on said connection <u>data</u> structure.

20) (**Currently amended**)   A method for processing packets comprising:
        accessing a packet associated with a connection; and

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assigning said packet to a processing queue<u>associated with a single processor of a</u> <u>multi processor server system,</u> wherein said processing queue provides uninterrupted single threaded processing of said data packet <u>associated with the connection</u> through a plurality of protocol layers <u>using a single thread of the single processor, wherein state information of the</u> <u>packet within the connection is preserved so as to mutually exclude other threads from</u> <u>processing packets of said connection through said plurality of protocol layers.</u>

21) (Cancelled)

22) (Cancelled)

23) (**Currently amended**)   The method as described in claim 20 further comprising generating a <u>unique</u> connection <u>data</u> structure associated with said connection based on address information of said connection <u>stored in said packets associated with the connection</u>.

24) (Original) The method as described in claim 23 wherein said address information comprises a local IP address and a remote IP address.

25) (Original) The method as described in claim 24 wherein said address information further comprises a remote port address and a local port address.

26) (**Currently amended**)   The method as described in claim 25 wherein said connection <u>data</u> structure is used to assign subsequent packets associated with said connection to said processing queue.

27) (Original) The method as described in claim 20 wherein said plurality of protocol layers includes a TCP protocol layer.

28) (Original) The method as described in claim 20 wherein said plurality of protocol layers includes an IP protocol layer.

29) (Cancelled)

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30) (Cancelled)

31) (Cancelled)

32) (Cancelled)

33) (**Currently amended**) A method as described in claim [[31]] 23 wherein said queue is associated with said connection data structure.

34) (Cancelled)

35) (Cancelled)

36) (**Currently amended**) A multiprocessor server system comprising:

a plurality of processors for processing packets through a plurality of protocol layers;

a plurality of threads running in the plurality of processors;

a plurality of queues, each queue associated with a respective processor of said plurality of processors; and

a memory resident connection data structure for assigning packets of a ~~same~~ connection to a ~~same~~ queue of said plurality of queues for processing said packets of said ~~same~~ connection ~~by a same~~ using a single thread associated with the single queue of a corresponding processor of said plurality of processors.

37) (Original) A multiprocessor server system as described in claim 36 wherein said connections are TCP connections.

38) (Original) A multiprocessor server system as described in claim 37 wherein said plurality of protocol layers comprise: IP; TCP; and socket layers.

39) (Original) A multiprocessor server system as described in claim 36 wherein a processor of said plurality of processors processes a packet of its queue without interruption through said plurality of protocol layers except for scheduling another packet on its queue.

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40) (Cancelled)

41) (**Currently amended**)   A multiprocessor server system as described in claim 37 wherein said connection data structure is established for a new connection upon receiving a new connection request and wherein said connection data structure comprises an identifier of a queue <u>associated with the single thread of the same corresponding processor</u> to which all packets of said new connection are to be assigned.

42) (Original) A multiprocessor server system as described in claim 36 further comprising a plurality of cache memories, each cache associated with a respective processor of said plurality of processors.

43) (Original) A multiprocessor server system as described in claim 36 wherein state information of any given packet of a same connection is preserved because said packets of said same connection are individually mutually excluded from said protocol layers.

44) (**Currently amended**)   A computer system comprising a processor coupled to a bus and a memory coupled to said bus and comprising instructions that when executed implement a method for processing data packets comprising:

  accessing a packet associated with a connection; and

  processing said packet through said plurality of protocol layers using a single thread <u>from a single processor by assigning said connection for processing to a single processor of a multiprocessor server system wherein packets associated with said connection are directed to said single thread associated with said single processor for processing,</u> wherein connection state information used by said plurality of protocol layers is preserved by mutual exclusion of other threads processing packets for said connection through said plurality of protocol layers.

45) (Original) The computer system as described in claim 44 wherein said single thread is uninterrupted while processing said packet through said plurality of protocol layers.

46) (Original) The computer system as described in claim 44 wherein said packet are assigned to a processing queue wherein said processing queue provides single threaded processing of said packet through said plurality of protocol layers.

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47) (Original) The computer system as described in claim 46 wherein said processing queue provides single threaded processing of said packet through said plurality of protocol layers by assigning only one packet to be processed by said plurality of protocol layers at a time.

48) (Original) The computer system as described in claim 47 wherein said packet is assigned to said processing queue based on address information of said connection.

49) (**Currently amended**)   The computer system as described in claim 44 wherein a unique connection data structure is generated specific to said connection based on address information of said connection stored in said packets associated with the connection.

50) (Original) The computer system as described in claim 49 wherein said address information comprises a local IP address and a remote IP address.

51) (Original) The computer system as described in claim 49 wherein said address information further comprises a remote port address and a local port address.

52) (Cancelled)

53) (Original) A computer system comprising a processor coupled to a bus and a memory coupled to said bus and comprising instructions that when executed implement a method for processing data packets comprising:

      accessing a packet associated with a connection; and

      assigning said packet to a processing queue associated with a single processor of a multi processor server system, wherein said processing queue provides uninterrupted single threaded processing of said data packet associated with the connection through a plurality of protocol layers using a single thread of the single processor, wherein state information of the packet within the connection is preserved so as to mutually exclude other threads from processing packets of said connection through said plurality of protocol layers..

54) (Original) The computer system as described in claim 53 wherein said processing queue provides mutual exclusion of same-connection packet processing through said plurality of protocol layers.

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55) (Cancelled)

56) (**Currently amended**)   The computer system as described in claim 53 wherein a
unique connection structure associated with said connection is generated based on address
information of said connection stored in the packets associated with the connection.

57) (Original) The computer system as described in claim 56 wherein said address
information comprises a local IP address and a remote IP address.

58) (Original) The computer system as described in claim 57 wherein said address
information further comprises a remote port address and a local port address.

59) (Original) The computer system as described in claim 58 wherein said connection
structure is used to assign subsequent packets associated with said connection to said
processing queue.

60) (Original) The computer system as described in claim 53 wherein said plurality of
protocol layers includes a TCP protocol layer.

61) (Original) The computer system as described in claim 53 wherein said plurality of
protocol layers includes an IP protocol layer.